

For ourselves, we dread the chill, and have some misgivings about the consequences of the reaction. We find ourselves in the "singular position" acknowledged by Pictet,—that is, confronted with a theory which, although it can really explain much, seems inadequate to the heavy task it so boldly assumes, but which nevertheless appears better fitted than any other that has been broached to explain (if it be possible to explain) somewhat of the manner in which organized beings may have arisen and succeeded each other. In this dilemma, we might take advantage of Mr. Darwin's candid admission that he by no means expects to convince old and experienced people, whose minds are stocked with a multitude of facts all viewed during a long course of years from the old point of view. This is nearly our case.

*The Cutting Ant of Texas (Ecodoma Mexicana, Sm.).*

By S. B. BUCKLEY.

These Ants have homes under ground. In order to kill the ants, great excavations were made. Their extent almost exceeds belief, but they were seen by hundreds of the citizens. The underground rooms are rounded or oblong cavities connected by cylindrical passages from 1 to 3 or 4 inches in diameter. Some chambers are 6 inches wide by nearly as many in height, others 12 inches. In a clayey soil these chambers are walled by a thin dirty-brown wax-like secretion. The lowest chambers are generally 10 or 12 feet deep, while the upper cells are rarely nearer the surface than 18 inches. I extended a tape line down to the bottom of one, and found it 17 feet deep; at one of their largest dens, a room was found 16 feet beneath the surface, and several others were at near the same depth. At that place the ground is dug out from 12 to 16 feet deep, extending over an area having an average diameter of 25 feet, all of which was filled with ant-cells. Several large avenues (4-5 in. diam.) entered the bottom of this large den. On striking an avenue, some ants were seen to enter it followed by others, loaded with barley, all coming from that underground passage. Where they got the barley was the question, which was finally solved by going to a stable more than 300 feet distant, from which ants were seen to descend, each with his barley-grain, and enter a hole in the ground near the base of the stable, which was the only place in the vicinity where there was any barley. Another avenue on the other side is said to come out at the bank of a stream, between 200 and 300 feet distant, where are some elm-trees, from which the ants obtained bits of leaves, and carried them through the said avenue into the base of the den. That they have extensive underground passages there is not the least doubt. A gentleman recently told me of an instance where they dug under or tunneled a stream to get into a garden. There was a large ant-den on the other side of the stream, and for a long time the garden was safe from their depredations; but finally the Cutting Ants were seen there, carrying bits of leaves into a small hole in the ground. There was no ant-den in the vicinity, except the one across the creek; and as there were no dirt-heaps on the surface of the ground in the garden, as there always

are above an ant-den, the inference was, that those Cutting Ants seen in the garden belonged to the tribe across the river.

The question will naturally arise, how is it possible for them to direct their course in digging those long underground passages so as to reach the surface at the wished-for spot? Let those who ask also answer. I only know that such long avenues exist, having thrust a long stick into one at the bottom of one of their dens, and I have also seen the outer openings of many of them on the banks of rivers and streams, where food can easily be had from the trees and bushes usually found growing on the banks of streams in all prairie lands.

At the large ant-den in Austin, before spoken of, millions of working ants, and bushels of eggs and larvæ, with great numbers of males and females, were destroyed. As soon as the large apartment containing the eggs, larvæ, and winged ants was found, a fire was kindled forthwith amongst them, for which purpose light combustible stuff was kept near. The pupa-cases were of different sizes, belonging to opposite sexes, and were in a more or less advanced stage of development. The workers at first are very small, scarcely a line in length. The eggs, mixed with minute young ants, were in a soft, grey, spongy substance, apparently leaves finely triturated and mixed with an animal secretion.

It is said they sometimes abandon their caves when from long residence the chambers become filthy, or perhaps they are injured from heavy rains, or it may be that the ants desire a better situation for provender. Whatever may be the cause, they have been known to emigrate *en masse*, and after making new excavations, and dwelling in them a few years, to return again to their first residence. It is probable that they have a division of labour; some nurse the young, and others provide food. In one instance I saw one cut off a segment of an elm-leaf, and another seized it as soon as cut, and carried it away; but generally I have noticed that he who cuts also carries. When cutting, one mandible is inserted and carried slowly along, the head swaying to and fro, and the other mandible moving its sharp point, apparently breaking the surface to lessen the thickness to be cut by the other.

The ant often stands on the part of the leaf which he is cutting off, but he is careful to remove to a firm place before it is finally severed; which done, he seizes one edge of it with his mandibles, and with a rapid movement throws it on his head and thorax, so that its lower edge rests between the lobes of the head and the spines of the thorax, and the upper edge is aloft. Away he goes, and joins the busy throng in the main path, which looks as if the ants had a gala day and were marching with banners flying. Lately, on the banks of the Colorado River, near Austin, I saw multitudes of ants in their path, going uphill with fragments of leaves and hack-berries (*Celtis*), some entire, and others with a small portion cut off to render them lighter and suitable to be carried by the smaller ants. The place at which they entered the ground was about 6 feet from the top of the bank. This pathway was steep, and even perpendicular for a distance of 5 or 6 inches at a place about 1 foot below their doorway.

The labour was severe to carry the berries up this path, but the struggle was great to get them to the top of the perpendicular spot. In performing this feat the berry-carriers met with many falls, often rolling 1 or 2 feet down the hill; but always sticking fast to their burdens, and trying again until they finally triumphed. One fell when near the top, and as he came up again and was about to succeed, I touched his load with the point of a knife, and down it and the ant went. His third attempt was put to the same test, but even then he did not get angry, or show the least impatience, but cheerfully took his berry, and went up and in at the door of the long avenue.

A lady lately showed me a safe where she kept sugar and sweetmeats which drew swarms of small ants. The legs of the safe were then placed in vessels of water, and the ants did not succeed in reaching the sweets during several days, but finally many of them were found in the sugar. After some little study to discover how they got there, they were seen to drop on the safe from the roof at the distance of about 2 feet above. These, however, were not the Cutting Ants.

The Cutting Ants often assist each other. I saw one which fell with a hack-berry at the vertical place before named. The berry got loose from him, and, instead of shouldering it again, he tried to drag it along, but was unable to pull it up the perpendicular. Many passed him and gave the cold shoulder; finally a kind ant came and pushed. By shoving and pulling, the two succeeded in getting the berry to the top, when the assister immediately left, and started down the hill. They live on both animal and vegetable food. I have seen them carrying worms and bugs. Whole beetles and numerous elytra have been found in their cells, but nothing indicating that they lay up large stores of food, like some of the East India ants, which have been seen to fetch their stores of corn to the surface to dry after heavy rains. The common Tumbler Bug (*Coprobius laevis*), in rolling his ball, sometimes heedlessly backs up over a nest of the Cutting Ant, and falls a victim, being overcome by numbers. Once I saw a very large one roll his ball into their midst, when he was fiercely attacked by the multitude. At first he stuck his nose in the sand, or rather between his fore legs, but the bites behind were so severe that he roused and flew in circles, finally alighting near me, which was no sooner done than an ant who accompanied the flight jumped to the ground, for a moment looked bewildered, then ran home, it may be to tell of his wonderful ride on the big bug.

Great is the damage which these ants do by destroying trees and vegetables. I know of one family who are about to leave a beautiful situation near a fine spring because the Cutting Ants have nearly killed their fruit-trees and ornamental shrubbery, especially roses, for which they have a peculiar fondness. They have been known to strip a fruit-tree of its leaves in a single night. In some sections these ants prevent the cultivation of fruit. Thousands of dollars have been uselessly spent in attempts to kill them by blowing noxious gases into their dens, or by placing poison at the doorways of their dwellings. A knowledge of the habits and abodes of these insects shows the futility

of such attempts. The fact is, but few of these can be reached by gas, let the bellows blow ever so hard; nor can many be killed by poison, even if the most deadly be placed within their doorways, for as soon as they discover harm, they form a new entrance. The only effectual method of destroying them is to dig, and kill the females and young, when the neuters will perish. This is so expensive that it will only be resorted to near a garden or dwelling; and as the Cutting Ants are scattered through western and central Texas, they probably never will be exterminated by man.—From the *Proc. Acad. Nat. Sciences of Philadelphia*, 1860, page 233.

*Note on Fredericella Sultana being found in the Winter.*

By The Rev. W. HOUGHTON, M.A., F.L.S.

*To the Editors of the Annals of Natural History.*

GENTLEMEN,—Professor Allman, in his valuable Monograph of the Freshwater Polyzoa (Ray Society, 1856), draws attention to the following fact in the economy of *Fredericella Sultana*:—“The statoblasts are small and seem to be but sparingly produced,—a circumstance in which this animal differs strikingly from several species of *Alcyonella* and *Plumatella*, in which the tubes at the proper season are constantly found loaded with statoblasts in the greatest profusion.” In confirmation of the truth of the above remark, and as an interesting fact explanatory of the comparative scarcity of the statoblasts in the tubes of *Fredericella Sultana*, I have to observe that I have met with this species in the months of December and January, as well as in the spring, summer, and autumn seasons. This species, therefore, it would appear, is perennial,—a point in which it differs from perhaps all the other members of the Freshwater Polyzoa. Now this seems to me to be a very satisfactory explanation of the fact alluded to by Dr. Allman, inasmuch as this species, since it lasts through the year, requires not a profusion of statoblasts. I know not whether any other species of freshwater Polyzoa are, like the *Fredericella*, perennial, but I am inclined to believe that the above-named species is an exception to the rule, and that all the members of the other genera which occur in this country do not last through the year; hence in these cases the necessity of a profusion of statoblasts (for but a very few, comparatively speaking, ever germinate) as a provision for fresh colonies in the spring of every succeeding year.

I remain, Gentlemen,

Truly yours,

W. HOUGHTON.

Solihull, Oct. 18, 1860.

*Note on Mr. Blyth's Paper on the Animals known as Wild Asses.*

By Major R. STRACHEY, F.R.S., F.L.S.

In Mr. Blyth's recent paper on the Animals known as wild Asses, he states that “the late Professor H. Walker referred the Tibetan Kyang to *Equus hemionus* of Pallas, and the Ghor-khur of this country is even more satisfactorily referable to *E. onager* of Pallas,